CLAIMS

1. A modified substrate comprising a hydrophilic polymer, wherein the soluble hydrophilic polymer ratio is 15 weight percent or less and the number of adhered human blood platelets is $10/4.3\times10^3$ μm^2 or less.

2. The modified substrate according to claim 1, wherein the substrate is obtainable by irradiating with radiation while the substrate is brought into contact with an aqueous solution of the hydrophilic polymer.

3. The modified substrate according to claim 2, wherein, in the aqueous solution of the hydrophilic polymer, the maximum increasing value of ultraviolet absorption value in the wavelength range of 260 to 300 nm, the increase being caused by irradiating with radiation, is 1 or less.

4. The modified substrate according to claim 2, wherein the substrate is obtainable by irradiating with radiation while the substrate is brought into contact with an aqueous solution containing the hydrophilic polymer and an antioxidant.

5. The modified substrate according to claim 4, wherein, in the aqueous solution of the hydrophilic polymer, the maximum increasing value of ultraviolet absorption value in the wavelength range of 260 to 300 nm, the increase being caused after irradiating with radiation, is 1 or less.

6. The modified substrate according to claim 1, wherein the surface hydrophilic polymer ratio is at least 20 weight percent.

7. The modified substrate according to claim 1, wherein the substrate comprises a plurality of hydrophilic polymers.

8. The modified substrate according to claim 7, wherein the substrate comprises a cationic hydrophilic polymer and a nonionic hydrophilic polymer.

9. The modified substrate according to claim 7, wherein the substrate comprises an anionic hydrophilic polymer and a nonionic hydrophilic polymer.

10. The modified substrate according to claim 1, wherein the amount of dissolution of the hydrophilic polymer is 0.5 mg/m^2 or less.

11. The modified substrate according to claim 1, wherein the hydrophilic polymer is a polyalkylene glycol or polyvinylpyrrolidone.

12. The modified substrate according to claim 1, wherein the hydrophilic polymer is a polymer derived from the living body.

13. The modified substrate according to claim 1, wherein the adsorptivity to interleukin-6 is at least 0.1 ng/cm^2.

14. The modified substrate according to claim 13, wherein the hydrophilic polymer is a polyalkylene glycol and the immobilization density of the polyalkylene glycol is 150 to

3,000 mg/m^2.

15. The modified substrate according to claim 13, wherein the substrate comprises a hydrophobic polymer.

16. The modified substrate according to claim 15, wherein the hydrophobic polymer is polymethylmethacrylate.

17. The modified substrate according to claim 1, wherein the substrate is a medical substrate.

18. A modified substrate obtainable by irradiating with radiation while the substrate is brought into contact with an aqueous solution containing a hydrophilic polymer and an antioxidant.

19. A separation membrane comprising the modified substrate according to claim 1.

20. The separation membrane according to claim 19, wherein the separation membrane is a hollow fiber membrane.

21. The separation membrane according to claim 20, wherein the hydrophilic polymer is bonded on the inner surface of the hollow fiber membrane.

22. The separation membrane according to claim 21, wherein the hydrophilic polymer is further bonded on the inside of the hollow fiber membrane.

23. A separation membrane of biogenic substances comprising the separation membrane according to claim 19.

24. A system comprising a plurality of the modified substrates according to claim 1.

25. The system according to claim 24, wherein the system comprising a plurality of the modified substrates composed of different materials.

26. The system according to claim 24, wherein the system is a separation membrane system comprising a port element, a separation membrane, and a circuit, and at least a part of the port element, the separation membrane, and the circuit comprises the modified substrate.

27. A method for producing a modified substrate comprising a step of irradiating the substrate with radiation while the substrate is brought into contact with an aqueous solution containing a hydrophilic polymer and an antioxidant.

28. The method for producing a modified substrate according to claim 27, wherein the substrate is immersed in the aqueous solution containing a hydrophilic polymer and an antioxidant in order to bring the substrate into contact with the aqueous solution.

29. The method for producing a modified substrate according to claim 27, wherein the adsorptivity to cytokine of the modified substrate after irradiating with radiation is at least 90% of the adsorptivity to cytokine of the substrate before modification.

30. The method for producing a modified substrate according to claim 29, wherein the cytokine is interleukin-6.

31. The method for producing a modified substrate according to claim 29, wherein the substrate comprises a hydrophobic polymer.

32. The method for producing a modified substrate according to claim 27, wherein the substrate is a separation membrane.

33. The method for producing a modified substrate according to claim 32, wherein the separation membrane is a hollow fiber membrane.

34. The method for producing a modified substrate according to claim 33, wherein the inside of the hollow fiber membrane is filled with the aqueous solution containing a hydrophilic polymer and an antioxidant in order to bring the hollow fiber membrane into contact with the aqueous solution.

35. The method for producing a modified substrate according to claim 34, wherein the outside of the hollow fiber membrane is further brought into contact with the aqueous solution.

36. The method for producing a modified substrate according to claim 32, wherein the aqueous solution is filtered through the separation membrane in order to bring the separation membrane into contact with the aqueous solution.

37. A method for producing a system comprising a step of

irradiating a plurality of substrates with radiation at the same time while the system comprising the plurality of substrates is brought into contact with an aqueous solution containing a hydrophilic polymer and an antioxidant.

38. The method for producing a system according to claim 37, wherein the plurality of substrates are composed of different materials.

39. The method for producing a system according to claim 37, wherein the system is a separation membrane system comprising a port element, a separation membrane, and a circuit, and the method comprises a step of irradiating the whole separation membrane system with radiation while the separation membrane system is brought into contact with the aqueous solution containing a hydrophilic polymer and an antioxidant.